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Oyster-growers recognize their own *tuiles* by a sort of trade-mark, which, by French law, it is forgery to imitate. After the *tuile* is moulded, and while still soft, a hole is punched in the top, either round, square, triangular, or of any desired shape; this private mark is recorded in due form, and wherever a tile bearing it is found, it is the unquestioned property of the one who has, so to speak, put his sign manual upon it. Our own laws protecting the oyster-grower need considerable alteration and improvement, especially in the State of Connecticut, where the oyster interest is a very large one; but our legislators, when the subject is properly put before them, will no doubt see the justice of giving the same protection to the marine, as to the cereal farmer, when each invest their money, and conduct their business equally in accordance with the law.

THE QUADRUPEDS OF ARIZONA.

BY DR. ELLIOTT COUES, U. S. A.

(Continued from p. 292.)

FAMILY *Viverridæ*, the Civets, etc. The very curious animal which forms the sole North American representative of this family, containing numerous species in the old world, has been found in so many localities contiguous to Arizona, that beyond a doubt it should be included here, though I am not aware that it has actually been taken in the Territory. The Ring-tailed Civet Cat (*Bassaris astuta*) is a queer animal, combining in itself the features of several distinct groups. Thus it has the ringed tail of a raccoon, the pointed snout and cunning

look of a fox, and the habits, at least in semi-domestication, of a house cat. It is well known to the hunters and miners of California, and by them highly prized as a pet. It is indifferently called "Mountain Cat," "Cat Squirrel," and "Raccoon Fox"; is easily tamed, and makes an interesting pet, as well as a useful one, from its dexterity in catching rats and mice. In a state of nature, it is said to be chiefly nocturnal, and to show spirited fight when attacked. It is about as large as a house cat; above, is yellowish or brownish-gray; below, white; and its tail is annulated alternately with black and white.

Family *Mustelidæ*, the Martens, etc. I am not aware that either of our two North American species of the genus *Mustela* occur so far south as Arizona. Of the Weasels, composing the allied genus *Putorius*, the species most likely to occur are the Bridled (*P. frenatus*), or its Californian representative, *P. xanthogenys*. The common American Mink (*P. vison*), of so very general distribution, may also occur. Hunters have several times described to me an animal they called the "Carcajou,"—which is the Wolverine (*Gulo luscus*),—and their accounts seemed quite pertinent, though I do not venture, upon such doubtful authority, to assert that it is an inhabitant of Arizona. Its existence has not been demonstrated farther south than Salt Lake City. The whole sub-family *Martinae*, composed of the three preceding genera, is by no means so well represented as the *Melinae*, comprising the Badgers (*Taxidea*), and the Skunks (*Mephitis*).

The family is chiefly developed in Arizona in these last-named animals, which have attained so unenviable a notoriety from their peculiarly disagreeable odor, believed to be the most powerful and noisome animal stench known. With this drawback, they are certainly beautiful

animals, both in form and colors. The latter are always pure black and white, at least so far as North American species are concerned; and there is a great similarity between them all in this respect. Dr. C. B. R. Kennerly obtained a Skunk at Pueblo Creek, which he says was intermediate in size between *Mephitis mephitis*, and *M. bicolor*. It probably belonged to the former species. Others, well known to occur in Texas, New Mexico, etc., and therefore likely to occur in Arizona, are *M. bicolor*, the little Striped Skunk; *M. varians*, the Texas Skunk; and *M. mesoleuca*, the White-backed Skunk. The first named of these extends across the Territory into California, and quite to the Pacific coast, where I have myself known of its occurrence. It is the smallest of all our species, and the only one which is spotted or streaked. The last is a most beautiful species, well figured by Audubon and Bachman, though under the erroneous name of *M. macroura*. It belongs to a different sub-genus (*Thiosmus*) from the rest, being distinguished by having one less upper molar, and a peculiarity in the position of the nostrils.

Concerning the occurrence of the third sub-family, *Lutrinæ*, I am unable to speak positively. It is most probable, however, that Otters do exist in the Territory, and they may be referable to that species described by Dr. Gray as *Lutra Californica*, which Professor Baird has considered to differ in some appreciable points from the common *L. Canadensis* of the Eastern States.

Family *Ursidæ*, the Bears. The two North American genera of plantigrade carnivora are represented by the Raccoons and the Bears. The former, *Procyon*, differs from *Ursus*, which comprehends the true Bears in dentition, and in many external characters, among which

the most notable are its small size, and elongated tail. I met with no Raccoons in Arizona, and it is doubtful if any exist; though *Procyon Hernandezii*, or that variety of it which Professor Baird has called *P. Mexicana*, from Sonora, may possibly occur.

Bears of at least two species are found, and are not uncommon, at least in all the wooded, and particularly the mountainous portions of the Territory. The vicinity of the San Francisco and Bill Williams Mountains was formerly noted for the numbers of these animals found there, though they appear to have somewhat decreased of late. The southern Rocky Mountains, and the ranges of California, seem to be particularly the home of the huge Grizzly (*U. horribilis*), which becomes less numerous farther north. A variety, characterized as *U. horriæus*, extends into Mexico. The common Black Bear (*U. Americanus*) also includes Arizona in its very extensive range.

Order *Marsupiatæ*, the Marsupials. A single family and genus (*Didelphys*) represents this remarkable order in North America. The Opossum of the Pacific slope is the *D. Californica*, which differs from *D. Virginiana* in several respects. It is smaller, and darker colored, especially about the head and feet, which parts are almost dusky; besides which the ears are black, blotched with yellow; and the tail also is particolored.

Order *Rodentia*, the Gnawers. This extensive order embraces animals which, by their individual numbers, and their great diversity in form and habit, always constitute a marked feature in the fauna of any country which they inhabit. It is remarkably well developed in Arizona, which has more species of Rodents than of all other orders taken together. If the part these animals play be

less prominent and conspicuous than that of the large carnivores or ruminants, it is not on that account the less interesting. And even in an economic point of view, it is scarcely less important; for the commercial value of the fur of some species, and the destructive agency of others, in field or in warehouse, gives them a consequence to a degree surpassed by no other animals. Aside from these practical considerations, the naturalist finds in this extensive group large room for study and investigation; and the diversity in form and structure and variety in habit exhibited, cannot fail both to please and instruct. The transition from the graceful, vivacious, arboreal squirrels to the clumsy, inactive, terrestrial marmots is great; but no intermediate links in the chain are wanting, and each one is curiously wrought and chased, with a story of its own to tell. Space will allow me to notice in detail only some of the more prominent rodents; and of the others I must perforce "make mere mention."

Family *Sciuridae*, the Squirrels, etc. The most characteristic, as well as most abundant species of Squirrel, is the Tuft-eared (*Sciurus Aberti*), discovered by Dr. Woodhouse in the San Francisco Mountains. It is one of the largest, and certainly the very handsomest of all our North American species. Besides very beautiful and harmonious colors, it rejoices in the possession of long pointed ear-tufts, extending an inch or more from the edge of the conch of the ear, which give it a peculiarly sprightly and truly elegant appearance. But it is not the case, as generally believed, that these ornaments are constantly present. I do not know what regulates their growth or fall; but certain it is, that under some circumstances, or at certain seasons, they are wanting, either wholly or in part. I have even shot specimens on the

same day, in some of which they were fully developed, and in others wanting. They may possibly be a sexual distinction. Their absence is the main diagnostic point of a *S. castanonotus*, described by Professor Baird,—a supposed species most probably identical with *S. Abertii*, as that eminent naturalist himself now believes.

The pine-clad mountains of northern and central Arizona are the chosen home of this Squirrel; and it rarely, if ever, quits these woods for other situations. It is there a resident species, breeding in abundance, and braving the rigors of winter. Its food is chiefly pine and other seeds, particularly pinoñes, the fruit of *Pinus edulis*, together with acorns of the several species of oaks which grow plentifully in the openings among the pine forests. Considering how seldom it is molested in those wild regions, it is a shy and wary species, and when it discovers an intruder, leaps with great celerity to the top of the pines, whose size and dense foliage in a great measure screen and protect it. It is also a very vigorous and muscular animal, requiring to be "hard hit" before it can be dislodged from its stronghold. Even when mortally wounded, it clings with surprising pertinacity, and for a long time, to its perch. Its cries are much like those of a Fox Squirrel. If wounded and captured, it shows determined fight, and can inflict a severe wound if incautiously handled.

Near the eastern limit of the Territory I one day observed a small squirrel, about the size of our chickaree, running among some rocks and bushes. Unluckily I failed to secure the specimen; but have little doubt that it was the rare and slightly known *S. Fremontii* Aud. and Bach. If this identification be correct, the locality is the southernmost as yet on record for the species.

It is just possible that a western Fox Squirrel (*S. Ludovicianus* Cústis, or *S. limitis* Baird) should extend into eastern Arizona; or that *S. fessor* Peale, of California, should reach the Colorado River. These, however, are rather speculative than demonstrated assertions, and await proof.

In addition to the preceding, a true Gray Squirrel inhabits Arizona, which I am inclined to think is a species new to science. It must be quite rare, as I never saw or obtained but a single one,—a female, shot December 20, 1865, at Fort Whipple. In general appearance it is similar to the common Eastern species, with which it agrees closely in the colors of the body; but it is smaller, and at the same time the tail is both relatively and absolutely longer, as well as much broader. It is possible that this may be the species alluded to by Professor Baird, page 263 of his "Mammals of North America," as "*Sciurus Carolinensis*??", from Santa Catarina, N. M. But his description applies only approximately to my specimen, which I shall describe as new.*

**SCIURUS ARIZONENSIS* Coues, sp. nov. — *Diag.* S. formâ et coloribus corporis *Sciuro Carolinensi* similis; sed minor, caudâ longiore, latiore, subtus distinctè tricoloratâ.

Description. — Rather smaller than the Eastern Gray Squirrel; of the same form and body-colors; the tail longer, fuller, and much broader. Ears moderate, untufted, both sides furred. Palms 5-tuberculated, nearly naked, but a little hairy on the concavities of the fingers; 4th finger longest, 3d nearly equal, 2d equal to 5th. Soles 6-tuberculated, naked to the heel, but furred rather far around on their sides; 4th toe longest, 2d and 3d nearly equal and but little shorter. Tail to end of vertebræ equalling length of body from nose to root of tail, the hairs projecting 3.1-2 inches beyond terminal vertebra. Above, from nose to root of tail, a uniform mixture of gray, black, white, and tawny; the latter predominating. On the sides of the body, and outsides of the limbs, the tawny and black disappear, leaving a clear grizzle of gray and white. Below, from chin to anus, with the insides of the limbs, pure white; very trenchantly defined against the color of the upper parts and sides. Both eyelids and cheeks about the nose white; woolly space at base of ears ochraceous white. The tail from above is basally of same color as outside of thighs, the tawny of the back stopping abruptly at its base; in the rest of its extent it is black, broadly fringed with white, and having white hairs scattered sparsely through its black portion. Viewed from below, the tail is tricolor, being centrally tawny, bordered with black, which is in turn fringed with white.

Dimensions. — Nose to anterior canthus of eye, 1.1 (inches and tenths); to root of tail 9.5. Tail to end of vertebræ 9.5; to end of hairs 13.0; its width at broadest part fully 6.0. Height of ear .8. Longest whisker 3.3. Palm to end of longest finger with claw 1.6; from olecranon to ditto 3.6. Heel to end of longest toe and claw 2.3; greatest width of sole .7.

Of the Striped Ground Squirrels, or "Chipmunks," composing the genus *Tamias*, only one species is common, which is the Gila Chipmunk (*T. dorsalis* Baird). It is a beautiful little animal, rather larger than the common Eastern one, and conspicuously different in the character of the dorsal stripes. It was first described from the deserts of Southern Arizona, but I found it abundant at Fort Whipple, and it may extend considerably farther north. Unlike most others, it is a rock-loving species, and rarely quits its favorite resorts. Among masses of lava and gneiss it may be seen tripping lightly and gracefully, its pretty tail held arched downward, or flirited from side to side. It is a shy and suspicious animal, though so rarely molested, and scarcely exhibits the familiarity of disposition shown by its Eastern congener. When alarmed, it hurries precipitately to the mouth of its retreat, where, as if conscious of security, it sits and chatters an angry defiance at the intruder. It is a permanent resident around Fort Whipple, but hardly seen during the winter, which it passes in its burrows, in which an abundant supply of food, in the shape of nuts, acorns, and seeds, is laid up during the fall for winter use.

I think that one other species of *Tamias*—possibly *T. Townsendii*—occurs rarely, but I cannot speak positively on this point. I have no knowledge of the existence of any Flying Squirrels (*Pteromys*) in Arizona.

The genus *Spermophilus*, comprising the true Ground Squirrels, or Squirrel Marmots, is well represented by quite numerous species, though none of them occur in such multitudes as to form the colonies for which some are so noted in other countries.

One of the smallest and the most beautiful of our

Spermophiles is the elegant little *S. Harrisii* of Audubon and Bachman. It is only about as large as a Chipmunk; has stripes which make it look very much like one, and many habits in common with it. The Arizonian species particularly resembles the *Tamias dorsalis* in general appearance, as viewed in life, and frequents precisely the same sort of localities. Though still very rare in collections, it is common enough in Western Arizona, and in fact in the greater part of the desert region about Fort Mojave, on both sides of the Colorado River. I saw a great many at different times in the autumn near Beal's Springs, where I found them in the most rocky and precipitous places. It was difficult to procure specimens, not only from the nature of the region, but on account of their extreme agility, and their unwillingness to venture at any time far from their secure rocky retreats.

The common and notorious California Ground Squirrel (*S. Beecheyi*) ranges eastward across the Colorado valley, though in Arizona it is by no means so abundant as in California, where it forms colonies approaching those of the prairie dog in extent, and is a great pest to the farmer. In the vicinity of Los Angeles, I had an excellent opportunity of studying its habits. On the flat or slightly rolling dry plains which stretch between that town and the sea-beach, it is exceedingly numerous. The burrows occur usually in clusters, and upon little mounds or hillocks of dirt formed by the soil heaped up during their excavation; but single ones are scattered in every direction. Upon these "earth-works" the animals may be seen at all times, sitting upright, and motionless as statues, their fore-paws drooped, and their eyes intently fixed upon the passer-by; or, when no suspicious object appears, lying and basking in the sun, or playing merrily

with each other upon the ramparts of their citadels. I have no doubt that the subterranean passages intercommunicate, and that each animal does not have its own entrance, though he may possess private apartments below. In the vicinity of large encampments, the grass, herbage, and in fact everything green is so closely cropped, that the ground is almost bare; and it becomes a matter for wonder that so many animals can contrive to fill their stomachs. As is the case with those of the prairie dog, the villages are inhabited by a species of burrowing owl, which takes possession of deserted holes. Over the dry plain the graceful mountain plover courses swiftly along; while overhead, or resting upon the ground, is the great squirrel hawk, on the look-out for its prey.

The general manners of these animals call forcibly to mind the prairie dogs. Like them, they hardly venture far from their burrows, to which they hasten precipitately on the first sign of an alarm. Reaching the entrance, they stop a moment in a squat attitude, or rise on their hind-quarters, the better to reconnoitre, venting their displeasure and suspicion by a sharp, chattering bark. They are tough, muscular animals, and must be hard hit to be killed; and even when mortally wounded, will make use of their convulsive death-struggles to reach their burrows, into which they at last drop exhausted, and may be thus lost to the collector.

The Line-tailed *Spermophile* (*S. grammurus* Say), is another common species, especially of the southern portions, whence it extends into Mexico. It has a peculiar appearance, produced mainly by its tail, calling to mind a true *Sciurus*; so much so, that it has been placed in that genus by some writers, although a true *Spermophilus*.

Observers agree in according to it decidedly arboreal habits. It is both a rock and woods-loving species, and Mr. J. H. Clark, who found it abundant at the copper mines, says it seems to choose its abode mainly with reference to a supply of food, making its burrow indifferently in loose soil, under rocks, or in hollow trees.

The Round-tailed *Spermophile* (*S. tereticauda* Baird) is a little known species, first described from specimens taken at Fort Yuma, whose precise extent of range remains to be determined. I have not met with it, and believe that no information concerning its habits has been put on record. The chief peculiarity lies in its tail, which is disproportionately long for this genus, cylindrical in shape, and very long-haired. It is among the smaller species, being only about six inches in length of body; is above of a light yellowish-brown, finely grizzled, and below of a soiled yellowish-white.

In addition to the preceding, several Mexican species may very likely extend into the Territory from Sonora. Such are *S. Mexicana*, *S. pilosoma*, and possibly *S. Couchii*. The common little *S. tridecemlineatus*, of the Missouri region, has been found so far south-west as Fort Thorn, N. M., and possibly should also be included. *S. lateralis*, a species closely allied to *S. Harrisii* has been found in the Des Chutes Basin, and may extend as far south as Arizona.

A step further from the true squirrels brings us to the Prairie "Dogs," as they are called; formerly classed with the *Spermophiles*, to which they are closely allied, but now more properly placed in a distinct genus (*Cynomys*). They mainly differ from the true *Spermophiles* in the extreme brevity of the tail, the very rudimentary cheek-pouches, and some dental and cranial peculiarities. The

species are strictly terrestrial, and eminently gregarious, being noted for the large colonies which they form. Long as they have been known, and much as has been learned about them, there are many points of their social and individual economy which remain very obscure. Such are those relating to their migrations, their supplies of food and water, their gestation, and their relations with the owls and rattlesnakes found among them. The commonest of our two species, *C. Ludovicianus*, is mainly confined to the great central plains. A second species occurs in Arizona; the short-tailed Prairie Dog (*C. Gunnisonii* Baird), named in 1855 from specimens brought from Coachetope Pass by Capt. Beckwith. It is distinguished from the other by its smaller size, somewhat different colors, and still shorter tail, which is not tipped with black. I was so fortunate as to secure a specimen of this rare animal, near the San Francisco Mountains, in July of 1864. A colony had settled in one of the little open grassy glades which are scattered like oases through that wild and broken region. No owls or rattlesnakes were to be seen, though a species of horned toad (*Phrynosoma Douglassii*) was extremely abundant. Their cries, movements, and general manners were much like those of the common species.

Passing over the marmots proper (*Arctomys*), of which I have no knowledge as Arizonian animals, there only remains to be noticed one more member of the *Sciuridæ*, —the Beaver (*Castor Canadensis* Kuhl). This animal differs in so many essential features, both external and anatomical, as well as in habits, from the family types, that naturalists doubt the propriety of retaining it in its present position. It is found abundantly on all the streams of the Territory. Judging from the accounts of

old trappers, its numbers seem even to have increased of late; owing, doubtless, both to the diminished value of its fur, of which so many articles now take the place, and to the Indian difficulties, which prevent the penetration of the hunter to its abodes. Particularly upon the Rios Salado and San Francisco is it very abundant; and its dams occur, in some places, every few hundred yards. The almost unbroken seclusion of these retreats gives the animals such a sense of security, that they are less strictly nocturnal in working or playing than in most localities. I have frequently seen them swimming about in broad daylight.

An Indian name of this animal, which I do not recall, signifies "little brother," and is given in recognition of that sagacity, or instinct, or reason, as it may be called, which is displayed in its social and domestic economy. But as one writer has well remarked, all that has been said concerning the wonderful intelligence, or even apparent "forethought" of the Beaver, only argues an instinctive knowledge to a degree possessed by a multitude of other animals; and far outrivalled by that required for the construction of many a bird's or insect's nest. Even the humble and despised muskrat builds habitations requiring almost as much constructive dexterity; and, in many of its habits, evinces a "forethought" quite equal to that of the Beaver. The keen pursuit of the Beaver for its money value, and the conspicuousness of some of its works, are the main causes of its unusual notoriety, and of the admiration with which it is always mentioned in trappers' narratives, and naturalists' embellishments of them. — *To be continued.*